CLAIMS

- 1. A cell in which a genomic gene encoding an enzyme relating to a sugar chain modification in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is knocked out, wherein the cell is naturalized in a serum-free medium.
- 2. The cell according to claim 1, wherein all of alleles on a genome encoding an enzyme relating to modification of a sugar chain in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain are knocked out, and wherein the cell is naturalized in a serum-free medium.
- 3. The cell according to claim 1 or 2, wherein an exon region containing an initiation codon of the genomic gene encoding an enzyme relating to modification of a sugar chain in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is deleted, and wherein the cell is naturalized in a serum-free medium.
- 4. The cell according to any one of claims 1 to 3, wherein the enzyme relating to modification of a sugar chain in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is α -1,6-fucosyltransferase.
- 5. The cell according to claim 4, wherein the α -1,6-fucosyltransferase is a protein encoded by a DNA selected from the following (a) or (b):
- (a) a DNA comprising the nucleotide sequence represented by SEQ ID NO:1;
- (b) a DNA which hybridizes with a DNA consisting of the nucleotide sequence represented by SEQ ID NO:1 under stringent conditions and encodes a protein having α -1,6-fucosyltransferase activity.
- 6. The cell according to claim 4, wherein the α -1,6-fucosyltransferase is a protein selected from the group consisting of the following (a), (b) and (c):
- (a) a protein comprising the amino acid sequence represented by SEQ ID NO:5;

- (b) a protein consisting of an amino acid sequence in which one or more amino acid(s) is/are deleted, substituted, inserted and/or added in the amino acid sequence represented by SEQ ID NO:5 and having α -1,6-fucosyltransferase activity;
- (c) a protein consisting of an amino acid sequence which has at least 80% amino acid sequence homology to the amino acid sequence represented by SEQ ID NO:5 and having α -1,6-fucosyltransferase activity.
- 7. The cell according to any one of claims 1 to 6, which is resistant to a lectin which recognizes a sugar chain structure in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain.
- 8. The cell according to claim 7, wherein said resistance is resistance in which the cell survives at a higher ratio than a cell in which the genomic gene has not been knocked out when the cells are cultured in a medium containing the lectin which recognizes a sugar chain structure in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain.
- 9. The cell according to any one of claims 1 to 7, wherein the serum-free medium is a protein-free medium.
- 10. The cell according to any one of claims 1 to 9, which comprises a gene encoding a glycoprotein.
- 11. The cell according to claim 10, wherein the glycoprotein is a glycoprotein having no sugar chain structure in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain.
- 12. The cell according to claim 10 or 11, wherein the glycoprotein is an antibody.
- 13. The cell according to claim 12, wherein the antibody belongs to an IgG class.

- 14. A process for producing a glycoprotein composition, which comprises using the cell according to any one of claims 1 to 13.
- 15. A process for producing a glycoprotein composition, which comprises culturing the cell according to any one of claims 1 to 13 in a medium to form and accumulate the glycoprotein composition in the culture, and recovering and purifying the glycoprotein composition from the culture.
- 16. The process for producing a glycoprotein composition according to claim 14 or 15, wherein the process is carried out by batch culture, fed-batch culture or perfusion culture.
- 17. The process according to any one of claims 14 to 16, wherein at least one selected from a nutrient factor and a physiologically active substance is added to the medium during culturing.
- 18. The process according to claim 17, wherein the nutrient factor is at least one selected from a glucose, an amino acid and a vitamin.
- 19. The process according to claim 17, wherein the physiologically active substance is at least one selected from an insulin, an insulin-like growth factor, transferrin and albumin.
- 20. The process according to any one of claims 14 to 19, wherein the glycoprotein composition is an antibody composition.
- 21. A method for naturalizing a cell in which a genomic gene encoding an enzyme relating to a sugar chain modification in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is knocked out in a serum-free medium, which comprises inoculating the cell into a medium for naturalization to give a cell density of 1×10^5 to 1×10^6 cells/ml.
- 22. A method for obtaining a clone in which a genomic gene encoding an enzyme relating to a sugar chain modification in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex

type N-glycoside-linked sugar chain is knocked out, which comprises naturalizing the cell in a serum-free medium by the method according to claim 21, and then cloning the cell.

- 23. A cell in which a genomic gene encoding an enzyme relating to a sugar chain modification in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is knocked out, wherein the cell is naturalized in a serum-free medium, which is obtainable by the method according to claim 21.
- 24. A clone in which a genomic gene encoding an enzyme relating to a sugar chain modification in which 1-position of fucose is bound to 6-position of N-acetylglucosamine in the reducing end through α -bond in a complex type N-glycoside-linked sugar chain is knocked out, wherein the clone is naturalized in a serum-free medium, which is obtainable by the method according to claim 22.
- 25. The method according to claim 21 or 22, wherein the serum-free medium is a protein-free medium,
- 26. The cell according to claim 23, wherein the serum-free medium is a protein-free medium.
- 27. The clone according to claim 24, wherein the serum-free medium is a protein-free medium.